



STINSON.1826-0719

October 3, 2019

VIA ELECTRONIC TRANSMISSION

Laurence Stinson, Esq.
Stinson Law Group, P.C.
1421 Rumsey Avenue
Cody, WY 82414

Engineering Report

Re: Case Name: Mears v. Sysco
Date of Accident: June 15, 2015

Dear Mr. Stinson:

As requested, Veritech Consulting Engineering, LLC has investigated an accident involving 2013 Dodge Charger Police Cruiser, driven by Rodney Mears, and a 2003 International tractor-trailer pulling a 2014 43-foot Great Dane trailer, driven by James Friede. The accident occurred on June 15, 2015 at approximately 2:10 pm on US 14 near milepost 33 at the east entrance to the Yellowstone Valley Inn.

Purpose: The purpose of this report was to reconstruct the subject accident and assess the actions of Mr. Mears and Mr. Friede.

Background: According to the Police Report, Mr. Mears was travelling east on US 14 at approximately 65 mph. Mr. Friede was travelling west on US 14 and slowed at the east entrance to the Yellowstone Valley Inn. Mr. Friede began a left turn into the east entrance without stopping. Mr. Mears saw the tractor begin its left turn, and applied brakes and steered to his right. Mr. Mears' Dodge struck the right front of the tractor with the left front of the Dodge. Mr. Mears was injured during the collision. The accident occurred during daylight hours and the weather at the time of the accident was reportedly clear.

Procedure: In conducting this investigation Veritech engineers reviewed the following provided documents and photographs:

- State of Wyoming Investigator's Traffic Crash Report, case number P2015083539
- Complaint and Jury Demand
- Answer, Affirmative Defenses, and Jury Demand of Defendant Sysco Montana, Inc.
- Defendant's Discovery Responses
- Plaintiff's Discovery Responses
- Defendant's Second Supplemental Responses to Plaintiff's First Request for Production of Documents

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- Defendant's Fourth Supplemental Rule 26 Disclosures
- Lytx video taken from Mr. Friede's International
- Airbag Control Module Data downloaded from Mr. Miears' Dodge by the Wyoming State Patrol
- Dropbox download of 10 Discs reportedly provided by Lt. Philip Farman containing photographs, dashcam video, and Lytx video
- Deposition transcript of James Charleton Kelly taken September 4, 2019, with exhibits
- Deposition transcript of James Masterson Friede taken September 5, 2019, with exhibits

Findings and Discussion: Based on Veritech's investigation and analysis, the following was determined:

Accident Site: The subject accident occurred on US 14 near the east entrance to the Yellowstone Valley Inn in Park County, Wyoming. In the vicinity of the accident, US 14 is a 2-lane asphalt road that runs primarily east-west. US 14 has a single travel lane in each direction separated by dashed lines. See Figure 1. According to the police report, the speed limit for US 14 is 65 mph.



Figure 1: Google Earth aerial image depicting area of accident.

2013 Dodge Charger: The 2013 Dodge Charger operated by Mr. Miears is a rear-wheel drive 4-door sedan with a police package. The Dodge has a Vehicle Identification Number (VIN) of 2C3 CDXAT 7 DH 577214 and has a published curb weight of 4,312

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pounds. The Dodge sustained damage to its front, hood, and windshield. See Figure 2. The provided photographs show that the airbags deployed.



Figure 2: Provided photograph of Mr. Miears' Dodge at the accident scene.

2003 International: The 2003 International tractor operated by Mr. Freide is a 2003 conventional cab and was pulling a 43-foot Great Dane trailer. The International has a VIN of 2HS CBAER X 3C 059775. The Great Dane trailer was a 43-foot refrigerated trailer and has a VIN of 1GR AA842 7 FB 708437. The combined weight of the tractor-trailer in the police report was stated to be in excess of 26,000 pounds. The International sustained damage to its right front as a result of the collision. See Figure 3. The provided photographs did not indicate damage to the trailer.

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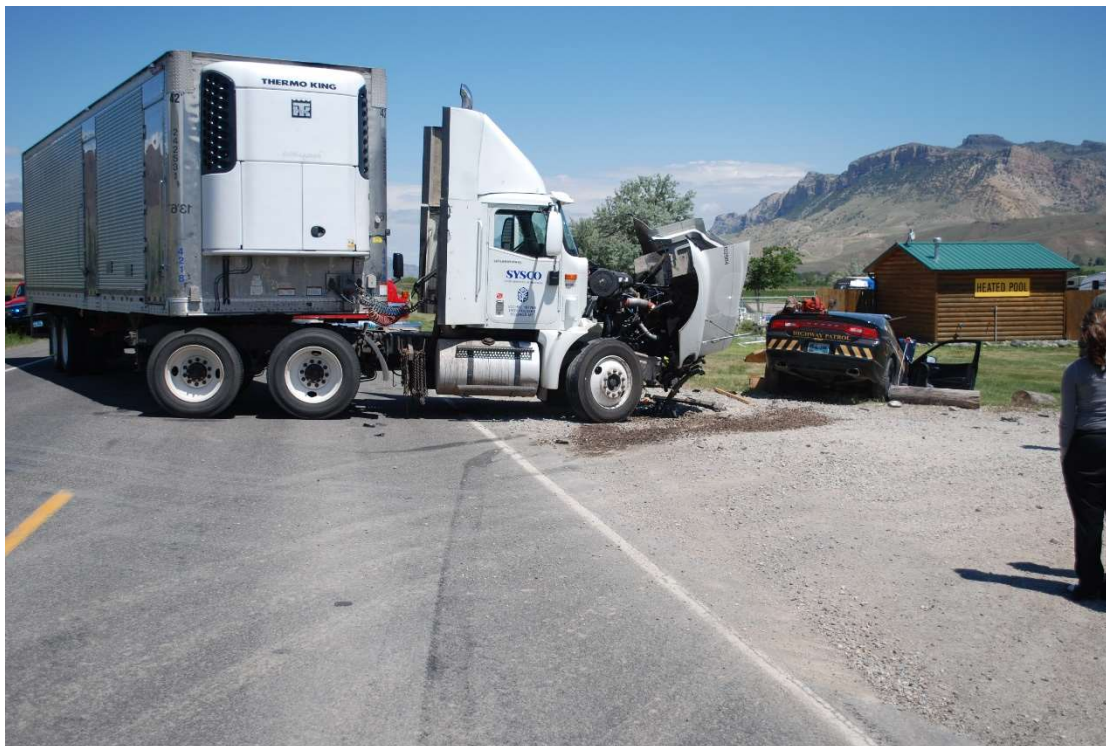


Figure 3: Provided photograph of Mr. Friede's International at the accident scene.

Accident Reconstruction: During the Wyoming State Patrol's investigation of the accident, the impact area, skid marks from the Dodge, and vehicle points of rest were measured and used to create a scale diagram. This diagram, along with a scaled aerial image, were used by Veritech engineers in PC-Crash simulation software to calculate the time-space relationship between the Dodge and the International for the 8 seconds prior to impact.

The Wyoming State Patrol downloaded the Dodge's Airbag Control Module (ACM). The Dodge ACM provides 5 seconds of pre-impact data in 0.1 second intervals, as well as the longitudinal and lateral change in speed (ΔV) due to the impact. The data indicates that Mr. Miears had his cruise control on 5 seconds prior to impact and his speed was 64-65 mph. Mr. Friede's truck recorded video for 8 seconds prior to impact, while the ACM module recorded 5 seconds of pre-impact data. For the time-space analysis, it was assumed that Mr. Miears had the cruise control on prior to the start of the ACM data and that his speed was also 64-65 mph during the preceding 3 seconds. The ACM data indicates that Mr. Miears applied his brakes 0.9 seconds prior to impact and the Dodge slowed from 64 mph to 54 mph at impact. The ACM recorded a longitudinal ΔV of 42.3 mph and a lateral ΔV of 14.9 mph. The total ΔV was therefore approximately 45 mph and the principal direction of force to the Dodge was approximately 20 degrees to the left of straight ahead.

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The Lytx video provided from the International was used to reconstruct the motion of the International for the 8 seconds preceding impact. The Lytx video shows the view out of the front of the truck as well as video of the driver. See Figure 4. The Lytx file also shows lateral and longitudinal accelerations for the truck as well as a GPS derived speed.



Figure 4: Screen capture from provided Lytx file.

Based on the provided video, the International was travelling approximately 16 mph at a point 8 seconds prior to impact. The truck slowed to approximately 13 mph in 3.5 seconds at which time Mr. Friede began his left turn. The truck continued to slow through the turn and was travelling approximately 8 mph at impact.

Driver Actions: The ACM data and the Lytx data were used to reconstruct the motion of both vehicles in PC-Crash simulation software up to the point of impact. The actions of both drivers could then be considered in light of the time-space relationship between the two vehicles.

Mr. Miears: The ACM data indicates that Mr. Miears applied his brakes 0.9 seconds prior to impact. Assuming a perception-reaction time of 1.5 seconds, Mr. Miears likely perceived that the International was a hazard approximately 2.4 seconds prior to impact when the Dodge was approximately 275 feet from the International. Analysis indicates that at that point in time, the International had begun turning left and its left front corner was approaching the centerline of US 14. Therefore, Mr. Miears was likely attentive and reacted to the hazard at a reasonable point in time and space.

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Mr. Friede: The Lytx video shows that Mr. Friede turned his head and began looking out the driver's side window approximately 7.5 seconds before impact. At that point, the Dodge was approximately 850 feet from the International. See Figure 5.



Figure 5: Screen capture from Lytx video showing Mr. Friede's direction of scan at 7.5 seconds prior to impact.

Mr. Friede continued to look out the side window until approximately 6.75 seconds before impact. At that time, he looks forward, but he appears to be looking at the dash rather than out the front window. At that point, the Dodge was approximately 745 feet from the International. See Figure 6.

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Figure 6: Screen capture from Lytx video showing Mr. Friede's direction of scan at 6.75 seconds prior to impact.

Mr. Friede then begins looking out the driver's side window approximately 5.5 seconds prior to impact, and he continues looking left until 3.5 seconds prior to impact. At that time, Mr. Friede initiates his left turn. When Mr. Friede initiates his left turn, the Dodge is 375 feet from the International. See Figure 7



Figure 7: Screen capture from Lytx showing Mr. Friede's direction of scan as he initiates the left turn.

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At the time he initiated his turn, Mr. Friede was travelling approximately 13 mph. From that speed, Mr. Friede could stop his truck in approximately 11 feet with full braking. Since he was already braking, his perception-reaction time would be lower, and the air brakes would already be pressurized, thus further lowering the time it would take for him to stop. However, even allowing for a 1.5 second perception-reaction time, had Mr. Friede properly perceived oncoming traffic as he started to turn left, the Dodge would have been visible, and Mr. Friede likely could have stopped in approximately 40 feet. Therefore, a review of the Lytx video indicates that Mr. Friede did not actively look for oncoming traffic for approximately 7.5 seconds before impact. Furthermore, even if he delayed his search for oncoming traffic until he started his turn, had he properly perceived the oncoming traffic he could have aborted his turn and stopped his truck prior to crossing the centerline.


Conclusions: Based on the available evidence, and this engineer's training, education, and experience, the following conclusions were reached:

- Mr. Miears' Dodge was likely travelling approximately 54 mph at impact.
- Mr. Miears' Dodge experienced a ΔV of approximately 45 mph with a principal direction of force approximately 20 degree left of straight ahead.
- Mr. Miears reaction to the International truck indicates he was likely attentive and reacted at a reasonable point in time and space.
- Mr. Friede failed to properly perceive oncoming traffic.
- Had Mr. Friede properly perceived the oncoming traffic, he could have aborted his turn, stopped his truck, and avoided the accident.

The opinions and conclusions expressed in this report are to a reasonable degree of engineering certainty and are based on the evidence available to these engineers as of the date of this report. These engineers reserve the right to amend and/or modify the conclusions contained in this report as additional information becomes available.

Sincerely,

VERITECH CONSULTING ENGINEERING, LLC



Jeffrey K. Ball, Ph.D., P.E.
Principal Engineer

JEFFREY K. BALL, Ph.D., P.E.

EDUCATION:

Ph.D. Engineering Science, Oxford University, Oxford, England, 1998, specialty in combustion modeling and misfire detection in spark ignition engines.
M.S. Engineering, Purdue University, West Lafayette, Indiana, 1992, emphasis in acoustics and active vibration control.
B.Sc. Engineering Mechanics, U.S. Air Force Academy, Colorado, 1983, emphasis in aircraft structural analysis and design.

REGISTRATION:

Professional Engineer in the states of Colorado and Mississippi.

Graduate of the United States Air Force (USAF) Accident Investigation Board President Course, certified to conduct aircraft accident investigations for the USAF.

Board Certified in Forensic Engineering by the National Academy of Forensic Engineers (NAFE).

EXPERIENCE:

Principal Engineer, Veritech Consulting Engineering, LLC, Castle Rock, CO, April 2008 to Present

Vice President, Mechanical Engineering, Knott Laboratory, LLC, Centennial, Colorado, September 2006 to April 2008

Manager, Mechanical Engineering, Knott Laboratory, LLC, Centennial, Colorado, April 2005 to September 2006

Senior Engineer, Knott Laboratory, Inc., Centennial, Colorado, 2003 to April 2005

Deputy Department Head, Associate Professor, Instructor Pilot, USAF Academy, Colorado, 1998 to 2003

Graduate Student, Oxford University, England, 1995-1998

Assistant Professor, Executive Officer, Instructor Pilot, USAF Academy, Colorado, 1993-1995

Graduate Student, Purdue University, West Lafayette, Indiana, 1991-1992

Instructor Pilot/Flight Examiner, AT-38B, 479th Tactical Training Wing, Holloman Air Force Base, New Mexico, 1988-1991

F-4E Pilot, 334th Tactical Fighter Squadron, Seymour-Johnson Air Force Base, North Carolina, 1985-1988

F-4D Pilot, 308th Tactical Fighter Squadron, Homestead Air Force Base, Florida, 1984-1985

Student, Euro-NATO Joint Jet Pilot Training, Sheppard Air Force Base, Texas, 1983-1984

ENGINEERING AND DESIGN:

At the United States Air Force Academy, Dr. Ball taught machine design, product design, automotive engineering, thermodynamics, statics, strength of materials, and dynamics. Dr. Ball supervised students in the design, test and operation of a race car for the Society of Automotive Engineers' (SAE) Formula competition and an off-road vehicle for the SAE Mini Baja competition. He conducted research, modeling, and testing on internal combustion engine performance, and directed a research project for the USAF on alternative powerplants for unmanned aerial vehicles. He is also experienced in mechanical design evaluation and analysis, material strength, and failure analysis. Dr. Ball has evaluated and analyzed heavy vehicles such as tractor-trailers, refuse trucks, dump trucks, front end loaders, delivery vehicles, and trains. These evaluations included design, safety systems, and operator interaction with these heavy vehicles. Dr. Ball has testified in State and Federal court in the areas of vehicular accident reconstruction, mechanical engineering, and patent and trade secret issues.

ACCIDENT RECONSTRUCTION:

Dr. Ball conducts and directs investigations of vehicular accidents, which include automobiles, commercial vehicles, trains, motorcycles, bicycles and pedestrians, as well as industrial accidents and machinery failures. He is experienced in analysis of vehicle speeds, crush damage, crashworthiness, occupant compartment intrusion, driver reaction, time/space relationships and analysis, as well as photogrammetry. He has investigated hundreds of accidents involving vehicle dynamics, vehicle safety, and visibility studies. Frequent aspects of these investigations involve failures or malfunction of brakes, tires, seat belts, and airbags. Dr. Ball also has working experience with engine, drive train, and suspension failure analysis. In addition, Dr. Ball led a team investigating the structural failure and crash of a glider at the USAF Academy.

ACHIEVEMENTS:

Dr. Ball has given presentations and lectures at a number of national and international technical conferences, including the Society of Automotive Engineers' World Congress in Detroit, Michigan, and at the Institution of Mechanical Engineers' AUTOTECH conference in Birmingham, England. Dr. Ball has authored numerous technical publications and articles, several which have been published in the Society of Automotive Engineers' Technical Paper Series and the Institution of Mechanical Engineers' Journal of Automotive Engineering. In 1998 the Institution of Mechanical Engineers awarded Dr. Ball the Crompton-Lanchester Medal for the outstanding paper on an automotive topic. Dr. Ball has also co-authored a textbook on Automotive Engineering Fundamentals published by the Society of Automotive Engineers. Dr. Ball retired from the USAF after 20 years of service as a Command Pilot with over 2000 hours of pilot and instructor time in gliders, TG-7A, T-37, T-38, AT-38B, F-4D, and F-4E aircraft. He currently holds FAA ratings as a commercial pilot.

PROFESSIONAL AFFILIATIONS:

Dr. Ball is a member of the following technical and professional societies:

NAFE - National Academy of Forensic Engineers

NSPE - National Society of Professional Engineers, Member

ASME - American Society of Mechanical Engineers

SAE - Society of Automotive Engineers, Member

NAPARS - National Association of Professional Accident Reconstruction Specialists

TBII - Tau Beta Pi Engineering Honor Society, Member

JEFFREY K. BALL, Ph.D., P.E.

PUBLICATIONS

1. Ball, Jeffrey K., Kittel, Mark H., Buss, Trevor J., Weiss, G., "Analysis of Video Event Recorder Data Used for Accident Reconstruction," SAE Paper 2014-01-2388. (2014)
2. Ball, Jeffrey K., Danaher, David A., Buss, Trevor J., "Full-Scale Testing and Analysis of Tractor-Trailer Braking Performance With and Without Trailer Anti-Lock Brakes," SAE Paper 2010-01-1891. (2010).
3. Danaher, David A., Buss, Trevor J., Ball, Jeffrey K. "Operation of the Eaton VORAD Collision Warning System and Analysis of the Recorded Data." SAE Paper 2009-01-2911. (2009).
4. Ziernicki, Richard M. and Jeffrey K. Ball. "Limitations of the Possibility of Applying the Monte Carlo Simulation in Vehicle Accident Reconstruction." XVI EVU Annual Meeting. Krakow, Poland. (9 November 2007).
5. Ball, Jeffrey K., David A. Danaher, and Richard M. Ziernicki, "A Method for Determining and Presenting Driver Visibility in Commercial Vehicles." SAE Paper 2007-01-4232. (2007).
6. Ziernicki, Richard M., Danaher, David A., and Ball, Jeffrey K.. "Forensic Engineering Evaluation of Physical Evidence in Accident Reconstruction." Journal of the National Academy of Forensic Engineers. (July 2007).
7. Ball, Jeffrey K., David A. Danaher and Richard M. Ziernicki. "Considerations for Applying and Interpreting Monte Carlo Simulation Analyses in Accident Reconstruction." SAE Paper 2007-01-0741. (2007).
8. Ball, Jeffrey K., and Richard Ziernicki. "An Innovative Technique for Using Experts in Patent Litigation." Intellectual Property Today (Sept. 2004).
9. Ball, Jeffrey K., Martin J. Bowe, C. R. Stone, and Nick Collings. "Validation of a Cyclic NO Formation Model with Fast NO Measurements." SAE Transactions, Journal of Fuels and Lubricants, Paper 2001-01-1010 (2001).
10. Ball, Jeffrey K., Martin J. Bowe, C. R. Stone, and Peter D. McFadden. "Torque Estimation and Misfire Detection using Block Angular Acceleration." SAE Transactions, Journal of Engines, Paper 2000-01-0560 (2000).
11. Ball, Jeffrey K., C. R. Stone, and Robert R. Raine. "A Technique for Estimating Completeness of Combustion and its Use in Modeling Cycle-by-Cycle Variations in Combustion." SAE Paper 2000-01-0953 (2000).
12. Ball, Jeffrey K., C. R. Stone and Nick Collings. "Cycle-by-Cycle Modeling of NO Formation and Comparison with Experimental Data." Proc. I. Mech. E. Pt. D, Journal of Auto. Eng. Vol. 213 (1999): 175-189.
13. Ball, Jeffrey K., Robert R. Raine, and C. R. Stone. "Combustion Analysis and Cycle-by-Cycle Variations in Spark Ignition Engine Combustion, Part I: An Evaluation of Combustion Analysis Routines by Reference to Model Data." Proc. I. Mech. E. Pt. D, Journal of Auto. Eng. Vol. 212 (D5) (1998): 381-399.
14. Ball, Jeffrey K., Robert R. Raine, and C. R. Stone. "Combustion Analysis and Cycle-by-Cycle Variations in Spark Ignition Engine Combustion, Part II: A New Parameter for Completeness of Combustion and its Use in Modeling Cycle-by-Cycle Variations in Combustion." Proc. I. Mech. E. Pt. D, Journal of Auto. Eng. Vol. 212 (D6) (1998): 507-523.
15. Stone, C. R., Jeffrey K. Ball, A. Hatchman, R. McCord, N. C. Pashley, Robert R. Raine, and R. Williams. "Combustion Analysis in the Rover K4 Optical Engine." AutoTech '97, Paper L16/C524-33 (Nov 1997): 4-6.
16. Ball, Jeffrey K., M. L. Nowack, and M. H. Brady. "Engineering Mechanics 290: Teaching Design at the U.S. Air Force Academy." Proceedings. 1994 ASME Curriculum Innovation Awards (1994): 19-22.
17. Ball, Jeffrey K., and James D. Jones. "A Comparison of Shaped Piezoelectric Actuators for Divergence Control." Journal of Intelligent Material Systems and Structures. 6(5) (1995): 598-609.

TECHNICAL CONFERENCES AND PRESENTATIONS

1. "Analysis of Video Event Recorder Data Used for Accident Reconstruction," Presenter. SAE Commercial Vehicle Congress. Chicago, IL. 8 Oct. 2014.
2. "The Use of Photogrammetry and Video Tracking in Forensic Science," Presenter, Department of Engineering Science, Oxford University, U.K., June 13, 2014
3. "Accessing and Interpreting Heavy Vehicle Event Data Recorders," Society of Automotive Engineers (SAE). Training and Certification. Cerritos, CA. 12-16 Dec. 2011.
4. "Full-Scale Testing and Analysis of Tractor-Trailer Braking Performance With and Without Trailer Anti-Lock Brakes," Presenter. SAE Commercial Vehicle Congress. Chicago, IL. 6 Oct. 2010.
5. SAE 2009 Heavy Truck Handling, Dynamics & Control Symposium, Greenville, SC, 4-8 May, 2009.
6. "Limitations of the Possibility of Applying the Monte Carlo Simulation in Vehicle Accident Reconstruction." Speaker. XVI EVU Annual Meeting. Krakow, Poland. 9 Nov. 2007.
7. "A Method for Determining and Presenting Driver Visibility in Commercial Vehicles." Society of Automotive Engineers (SAE). Presenter. SAE Commercial Vehicle Congress. Chicago, IL. 31 Oct. 2007.
8. "Forensic Engineering Evaluation of Physical Evidence in Accident Reconstruction." Presenter. National Academy of Forensic Engineers Annual Meeting (NAFE). Denver, CO. 28 Jul. 2007.
9. "Considerations for Applying and Interpreting Monte Carlo Simulation Analyses in Accident Reconstruction" Presenter. SAE 2007 World Congress. Detroit, MI (16-19 Apr. 2007).
10. AIRP Standard Committee Meeting. "Society of Automotive Engineers (SAE). Seminar: International Congress and Exposition. Cobo Hall, Detroit, MI. 18 Apr. 2007.
11. "Commercial Vehicle Braking Systems." Society of Automotive Engineers (SAE). Training and Certification. Detroit, MI. 16-18 Apr. 2007.
12. "Engineering Experts: Who Should You Hire and What Should They Do?" Presenter. Waste Management Litigation Conference. New Orleans, LA. 18 May 2006.
13. "FOCUS ON TRIAL - What Works at the Crossroads of Your Case?" Presenter. ALFA Transportation Seminar. Lake Las Vegas, NV. 27 Apr 2006.
14. "Vehicle Accident Reconstruction." Society of Automotive Engineers (SAE). Seminar: International Congress and Exposition. Cobo Hall, Detroit, MI. 3-5 Apr 2006.
15. SAE Accident Investigation and Reconstruction Practices Committee, Joe Marsh, Sponsor, "Equidistant Crush Measurement Techniques", SAE Standard J2433, Society of Automotive Engineers 2006.
16. "Using Photogrammetric Animations to Effectively Present Your Accident Reconstruction to the Jury", Presenter. American Bar Association's Emerging Issues in Motor Vehicle Product Liability Conference. Phoenix, AZ. 1 Apr 2005.
17. "Vehicle Accident Reconstruction: The State of the Art", Presenter. Utah Defense Lawyer's Association. Salt Lake City, UT. 12 Nov 2004.
18. "Vehicle Accident Reconstruction." Society of Automotive Engineers (SAE). Seminar: International Congress and Exposition. Cobo Hall, Detroit, MI. 8-11 Mar 2004.
19. "Vauxhall 14-40: An 80th Year Review of its Technology." Presented paper 2002-01-0452. SAE 2002 World Congress. Detroit, MI (5-8 Mar 2002).
20. "Torque Estimation and Misfire Detection using Block Angular Acceleration." Presenter. SAE 2000 World Congress. Detroit, MI (6-9 Mar 2000).
21. "A Technique for Estimating Completeness of Combustion and its Use in Modeling Cycle-by-Cycle Variations in Combustion." Presenter. SAE 2000 World Congress. Detroit, MI (6-9 Mar 2000).

INTERNAL REPORTS/NON-REFEREED PAPERS

1. Ball, Jeffrey K., Robert R. Raine, and C. R. Stone. "Combustion Analysis and Cycle-by-Cycle Variations in Spark Ignition Engine Combustion." Report to the Engineering and Physical Sciences Research Council (EPSRC) UK (1997).
2. Ball, Jeffrey K., R. McCord, C. R. Stone, and R. Williams. "Combustion Photography in the Rover K4 Optical Engine." Department of Engineering Science University of Oxford (1996).

TEXTBOOKS AND THESIS

1. Ball, Jeffrey K., and C. R. Stone. *Automotive Engineering Fundamentals*. Warrendale, PA: Society of Automotive Engineers, Inc., Jun 2004.
2. Ball, Jeffrey K. "Cycle-by-Cycle Variation in Spark Ignition Internal Combustion Engines." University of Oxford, UK, D. Phil. Thesis 1998.

Expert Testimony for Jeffrey K. Ball, Ph.D., P.E.
Since July 1, 2003

	A	B	C	D	E	F	G	H	I	J	K
1	Date of Testimony	Trial	Hrng	Arb	Depo	Type	Description	Job Number	Client	Case No	District/City/State
2	2019										
3	6/13				X	TRADE	Shuttlewagon Inc. vs. Higgins et al.	Yeretsky.1803	Plaintiff	1816-CV07674	Circuit Court, Jackson County, Missouri
4	5/13				X	VAR	Weber vs. BNSF	Nicastro.1764	Defendant	DV 17-1668	Montana Thirteenth Judicial District Court Yellowstone County
5	Year count	0	0	0	2						
6	2018										
7	10/29	X				MECH	Canadian Pacific vs. Knoedler, et al.	Mohan.1560	Plaintiff	1:11-cv-314	District Court for Western District of Pennsylvania
8	10/19				X	MECH	Pineda vs. Waste Management	Coschignano.1669	Defendant	2017-005706-CA-01	Circuit Court Miami-Dade County, Florida
9	10/12				X	VAR	Lindor et al. vs. Titan et al.	Latimer.1615	Defendant	16-18415 CA 06	Circuit Court Miami-Dade County, Florida
10	10/8				X	VAR	O'Donnell vs. Key Energy	Fenech.1655	Defendant	M129923	Superior Court, Monterey County, California
11	9/21				X	VAR	Dittrich vs. Waste Management	Rogowicz.1712	Defendant	16JE-CC00325	Circuit Court, Jefferson County, Missouri
12	8/2	X				VAR	Wynn vs. BNSF	Ast.1674	Defendant	15CA-CC00241	Circuit Court, Cass County, Missouri
13	6/26				X	VAR	Wynn vs. BNSF	Ast.1674	Defendant	15CA-CC00241	Circuit Court, Cass County, Missouri
14	5/25				X	TRADE	TAL vs. ITW	Gottschalk.1646	Defendant	5: 15-cv-00282-FL	Circuit Court, Eastern District of North Carolina, Western Division
15	Year count	2	0	0	6						
16	2017										
17	10/9				X	VAR	Jama vs. Carroll, et al.	Venker.1297	Defendant	15PH-CV01234	Circuit Court, Phelps County, Missouri
18	4/25				X	ANIM	Tafoya vs. New Prime, et al.	Baker.1611	Plaintiff	D-412-CV-2015-00190	District Court, San Miguel County, New Mexico
19	3/13	X				MECH	Canadian Pacific vs. Knoedler, et al.	Mohan.1560	Plaintiff	27-CV-14-8066	District Court, Hennepin County, Minnesota
20	1/26				X	MECH	Canadian Pacific vs. Knoedler, et al.	Mohan.1560	Plaintiff	1:11-cv-314	District Court for Western District of Pennsylvania
21	Year count	1	0	0	3						
22	2016										
23	10/5	X				VAR	Ross vs. Jeschke Ag Service	Accurso.1448	Plaintiff	1516-CV00847	Circuit Court, Jackson County, Missouri
24	8/30	X				VAR	Pearson vs. Waste Management of Oregon	Crosby.1558	Defendant	15CV18258	Circuit Court, Multnomah County, Oregon
25	8/2	X				VAR	Conklin vs. Raya and Metro Mix	Whalen.1505	Plaintiff	2015CV30397	District Court, Denver County, Colorado
26	5/25				X	VAR	Ross vs. Jeschke Ag Service	Accurso.1448	Plaintiff	1516-CV00847	Circuit Court, Jackson County, Missouri
27	2/11				X	VAR	Voss vs. Alpine Waste	Hall.1542	Defendant	15CV30127	District Court, Arapahoe County, Colorado
28	Year count	3	0	0	2						
29	2015										
30	12/9				X	VAR	Abraham vs. Graebel Van Lines	Yarbrough.1524	Defendant	14-CV-197-S	District Court, District of Wyoming
31	10/27	X				VAR	Wilson vs. Union Pacific RR	Leff.1403	Defendant	11AG-CC-00056	District Court, Grundy County, Missouri
32	9/4	X				MECH	Harrison vs. BNSF	Knight.1467	Defendant	2014CV30752	District Court, City and County of Denver, Colorado
33	6/9				X	PATENT	Sky Zone vs. Sky High	Rawat.1499	Defendant	3:11-cv-00141-LRH-WGC	District Court, District of Nevada
34	5/19				X	VAR	Ochsner vs. BNSF	Cook.1417	Defendant	CJ-2011-103	District Court, Pawnee County, Oklahoma
35	5/13				X	MECH	Viehland vs. Kimble Mixer, Inc., et al.	Avellino.1503	Defendant	13AB-CC00118	Circuit Court, Franklin County, Missouri
36	4/10				X	VAR	Tafoya vs. OBM Transport, et al.	Wosick.1447	Defendant	D-412-CV-2012-00055	District Court, San Miguel County, New Mexico
37	Year count	2	0	0	5						

Expert Testimony for Jeffrey K. Ball, Ph.D., P.E.
Since July 1, 2003

	A	B	C	D	E	F	G	H	I	J	K
38	2014										
39	12/16				X	VAR	Chavez vs. Singh	Gittler.1441	Defendant	S-1500-CV-277991	Superior Court, Los Angeles County, California
40	10/20	X				VAR	Schnittgen vs. BNSF	Nicastro.1391	Defendant	ADV 13-168	District Court, Cascade County, Montana
41	10/3				X	VAR	Trice vs. WUMC	Leming.1334	Defendant	1222-CC01826	Circuit Court, St. Louis, Missouri
42	8/5	X				PATENT	In the Matter of Certain Soft-Edged Trampolines	DelMonaco.1424	Defendant	337-TA-908	U.S. International Trade Commission, Washington, DC
43	6/30	X				VAR	Haley vs. Morie, et al.	Hunter.1303	Plaintiff	11JE-CC01070	Circuit Court, Jefferson County, Missouri
44	6/25	X				VAR	Winchester vs. BNSF	Beam.1241	Defendant	CI 11 644	District Court, Scotts Bluff County, Nebraska
45	6/23				X	ANIM	Wilson vs. Union Pacific RR	Leff.1403	Defendant	11AG-CC-00056	District Court, Grundy County, Missouri
46	6/19				X	PATENT	In the Matter of Certain Soft-Edged Trampolines	DelMonaco.1424	Defendant	337-TA-908	U.S. International Trade Commission, Washington, DC
47	6/10			X		PATENT	Bensons vs. World Wide Stationery	Sinclair.1400	Defendant	ARB 085/11/NAB	Singapore International Arbitration Centre, London, UK
48	5/12	X				VAR	Giovanni vs. BNSF	Coates.1318	Defendant	11 CV 1894	District Court, Wyandotte County, Kansas
49	4/29	X				VAR	Stubbs vs. Carman	Troshynski.1385	Plaintiff	CI 11-092	District Court, Furnas County, Nebraska
50	3/17	X				SFTY	Graham vs. Coca Cola	Cialkowski.1394	Defendant	27-CV-13-8253	District Court, Hennepin County, Minnesota
51	2/7				X	VAR	Giovanni vs. BNSF	Coates.1318	Defendant	11 CV 1894	District Court, Wyandotte County, Kansas
52	2/4				X	VAR	Haley vs. Morie, et al.	Hunter.1303	Plaintiff	11JE-CC01070	Circuit Court, Jefferson County, Missouri
53	Year count	7	0	1	6						
54	2013										
55	7/23				X	VAR	Lopez vs. Rude Dog Bar and Grill	Pedersen.1340	Defendant	KC-063444	Superior Court, Los Angeles County, California
56	3/12				X	VAR	Wood vs. Metal Container Corp.	Hunter.1277	Defendant	10JE-CC01033	Circuit Court, Jefferson County, Missouri
57	2/12				X	VAR	Wesley vs. Metadigm Services	LaRocca.1271	Defendant	CJ-2012-8	District Court, Ottawa County, Oklahoma
58	1/30	X				VAR	Chastain vs. Waste Management	Hatcher.1119	Defendant	CJ-08-117	District Court, Cleveland County, Oklahoma
59	Year count	1	0	0	3						
60	2012										
61	9/27	X				PATENT	World Wide Stationery vs. Bensons International	Rabenberg.1249	Plaintiff	3:11-cv-00523-JZ	District Court, Northern Ohio Western Division
62	8/20				X	VAR	Piccoli vs. Waste Management vs. Country Preferred	Fayollat.1153	Plaintiff	10-L-236	Circuit Court, Peoria County, Illinois
63	8/2				X	PATENT	World Wide Stationery vs. Bensons International	Rabenberg.1249	Plaintiff	3:11-cv-00523-JZ	District Court, Northern Ohio Western Division
64	3/12				X	VAR	Brockett vs. Vandalia Railroad	Williams.1223	Defendant	09-L-05	Circuit Court, Fayette County, Illinois
65	Year count	1	0	0	3						
66	2011	2			6			Plaintiff	2	Defendant	6
67	2010	1		1	8			Plaintiff	4	Defendant	6
68	2009	1			5			Plaintiff	2	Defendant	4
69	2008	1	1		5			Plaintiff	4	Defendant	3
70	2007	4			5			Plaintiff	3	Defendant	6
71	2006	1			5			Plaintiff	3	Defendant	3
72	2005				3			Plaintiff	3	Defendant	0
73	2004				3			Plaintiff	1	Defendant	2
74											
75	Total for Mr. Ball since 1/1/2004					Testified	Clients				
76	Trial					Hrng	Arb	Depo	Total	For Plaintiff:	For Defendant:
77	27					1	2	70	100	36	64

PROFESSIONAL HOURLY BILLING RATES

Engineer	Investigation and Analysis	Testimony
Jeffrey K. Ball, Ph.D., P.E.	\$325.00	\$375.00*
Mark H. Kittel, P.E.	\$290.00	\$350.00*
Joseph Tremblay, P.E.	\$185.00	\$225.00*
J. Ted Archuleta	\$150.00	N/A
Support Staff	\$60.00	N/A

*Veritech Consulting Engineering, LLC. requires a **non-refundable** deposit of 2 hours of testimony time to be paid prior to the deposition or trial.

OTHER FEES

FILE ADMIN FEE	\$150.00	Applied to every new file. Covers digital camera use, in-house printing, software fees and file opening fee
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IN-HOUSE SERVICES	CONTRACT SERVICES
TRAVEL Travel Time Billed "door to door" at Engineer's standard billing rate Travel Expenses Cost plus 10% Personal Vehicle Mileage \$0.58 per mile	TESTING SERVICES Testing materials Cost plus 10% Equipment Rental Cost plus 10%
ANIMATION AND GRAPHICS Animation Per quoted rate Rendering Services \$250 per session Models, Graphics, Court Exhibits Per quoted rate	CONSULTING Outside Consultants Cost plus 10%
EQUIPMENT USE FEE CDR Equipment (airbag module download) \$100.00 Survey Equipment \$100.00 per survey	LEGAL EVIDENCE Storage of Legal Evidence Cost plus 10%